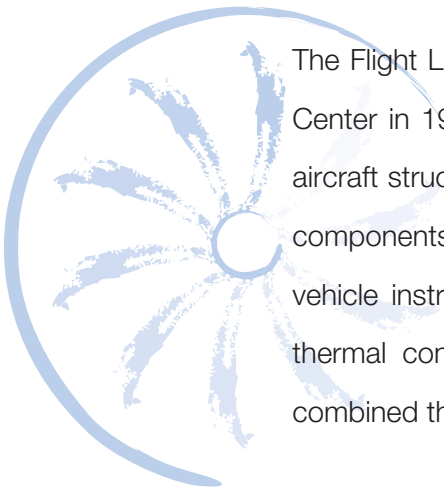


NASA'S Aeronautics Test Program

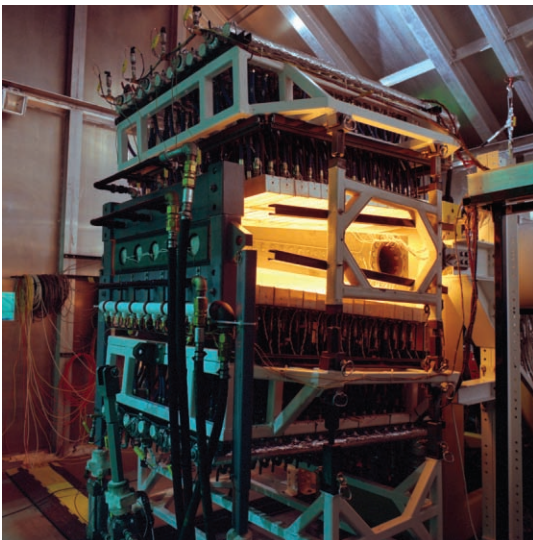
Flight Loads Laboratory



The Flight Loads Laboratory (FLL) was constructed at NASA's Dryden Flight Research Center in 1964 as a unique national laboratory to support flight research and tests of aircraft structures. The FLL conducts mechanical-load and thermal studies of structural components and complete flight vehicles in addition to performing calibration tests of vehicle instrumentation for real-time determination flight loads. Mechanical loads and thermal conditions can be applied either separately or simultaneously to represent combined thermal-mechanical load conditions.

The FLL's experienced and skilled technical staff provides expertise in ground and flight test design and operations; load, stress, and thermal analysis; and instrumentation and

measurement systems development. These skills, coupled with a large array of capital equipment and advanced data acquisition and control systems, make the FLL an ideal location to test aerospace structures from subsonic through hypersonic flight regimes.





Characteristics

| | |
|-----------------------------|---|
| High bay dimensions | 164 ft wide by 120 ft deep by 40 ft high |
| Mechanical loading | |
| Channels | Up to 84 channels hydraulic load control |
| Force capability | Up to 300 000 lb |
| Thermal testing | |
| Temperature range | −320 to >3000 °F |
| System elements | Quartz lamp and graphite heating systems |
| Capability | Independent zone configuration and control |
| Structural dynamics testing | Modal survey testing capable, structure testing, and control mode interaction testing |

Facility Benefits

- Single facility capable of conducting mechanical, thermal, and structural dynamics research and testing.
- Combined thermal, mechanical, and structural dynamics testing allows for study of the effects of these combined conditions.
- Verification of static or dynamic structural performance at realistic flight temperatures.
- Advanced strain gauge instrumentation capability.
- Elevated temperature modal survey testing.
- Capability to utilize photogrammetry techniques for full-field deformation and strain measurements.
- Acoustic emission sensing for damage detection.
- Location allows direct access to Dryden Flight Research Center and Edwards Air Force Base taxiways and runways, as well as Rodgers dry lakebed.

Facility Applications

- Single component testing
- Full aircraft testing
- Thermal, mechanical, and structural dynamics testing
- Wide range of projects supported from X-15 to crew exploration vehicle (CEV)

Contact Information

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